Claims:

WE CLAIM:

1. A method of improving riding performance of a bicycle having a rear wheel suspension system, which comprises an upper rocker arm and a lower rocker arm, each rocker arm comprising rearward and forward pivot points, the method comprising the step of:

tracking a chain torque line with an instant center, thereby improving the bicycle's performance by reducing torque reactivity of the suspension system,

wherein the instant center is defined as a point at the intersection of a first imaginary straight line drawn through the rearward and forward pivot points of the upper rocker arm, and a second imaginary straight line drawn through the rearward and forward pivot points of the lower rocker arm, and wherein the instant center is located in front of a front wheel axle, and above a horizontal line extending through the front wheel axle when the suspension system is not compressed, and a perpendicular distance between the instant center and the chain torque line decreases to zero as the suspension is compressed, and

wherein the chain torque line is defined as a parallel line extending along the tension side of a chain while the chain is positioned on chain sprockets of the bicycle.

2. The method of claim 1, wherein the step of tracking a chain torque line with an instant center reduces chain torque reactivity of the suspension system.

3. The method of claim 1, further comprising a step of reducing brake torque reactivity of the suspension system by positioning a brake about the rear wheel of the bicycle so that braking forces created by the brake acting on the rear wheel are nearly perpendicular to a straight line passing through the rearward pivot points of the upper and lower rocker arms, thereby reducing brake torque reactivity of the suspension system.

4. The method of claim 3, comprising a step of positioning the brake on a shockstay that has a receptacle to receive the rear wheel axle, and that is pivotably connected to the rearward pivot points of each of the upper and lower rocker arms.

5. The method of claim 1, further comprising the steps of:

providing a rider on the bicycle, the combination of the rider and the bicycle having a combined center of gravity; and

controlling compression of the suspension system by maintaining a ratio of (i) a perpendicular distance from the ground to a point where a line extending forward from a point where the rear wheel contacts the ground to the instant center intersects a perpendicular line extending vertically through the combined center of gravity, and (ii) a perpendicular distance from the ground to the instant center, less than 3/10.

6. The method of claim 1, further comprising the step of aligning the instant center with the chain torque line so that the perpendicular distance between the chain torque line and the instant center is zero at any point throughout the suspension system's full range of compression.

7. The method of claim 6, wherein the perpendicular distance between the chain torque line and the instant center is zero when the bicycle is in a normally laden position.

8. The method of claim 6, wherein the perpendicular distance between the chain torque line and the instant center is less than 1.46 inches throughout the suspension system's full range of compression.

9. The method of claim 6, wherein the instant center is aligned with an average chain torque line, the average chain force torque line defined as a parallel line extending along the tension side of the bicycle's chain when the chain is positioned at a vertical distance from the center of the forward and rearward chain sprockets, respectively, wherein the vertical distance is the average of the radii of the smallest and largest forward chain sprockets and the average of the radii of the smallest and largest rearward chain sprockets.

10. A method of improving riding performance of a bicycle having a rear wheel suspension system, which comprises an upper rocker arm and a lower rocker arm, each rocker arm having a forward and rearward end, the method comprising the step of:

tracking a chain torque line with an instant center, thereby improving the bicycle's performance by reducing torque reactivity of the suspension system,

wherein the instant center is defined as a point at the intersection of a first imaginary straight line extending forward from the rear end, along the center, of the upper rocker arm, and a secondary imaginary line extending forward from the rear end, along the center, of the lower rocker arm, and wherein the instant center is located in front of a front wheel axle, and above a horizontal line extending through the front wheel axle when the suspension system is not compressed and a perpendicular distance between the instant center and the chain torque line decreases to zero as the suspension is compressed, and

wherein the chain force torque line is defined as a parallel line extending along the tension side of a chain while the chain is positioned on chain sprockets of the bicycle.

11. The method of claim 10, further comprising the step of aligning the instant center with the chain torque line so that the perpendicular distance between the chain torque line and the instant center is zero at any point throughout the suspension system's full range of compression.

12. The method of claim 11, wherein the perpendicular distance between the chain torque line and the instant center is zero when the bicycle is in a normally laden position.

13. The method of claim 10, further comprising a step of reducing brake torque reactivity of the suspension system by positioning a brake about the rear wheel of the bicycle so that braking forces created by the brake acting on the rear wheel are perpendicular to a straight line passing through the rearward pivot points of the upper and lower rocker arms, thereby reducing brake torque reactivity of the suspension system.

14. The method of claim 10, further comprising the steps of:

providing a rider on the bicycle, the combination of the rider and the bicycle having a combined center of gravity; and

controlling compression of the suspension system by maintaining a ratio of (i) a perpendicular distance from the ground to a point where a line extending forward from a point where the rear wheel contacts the ground to the instant center intersects a perpendicular line extending vertically through the combined center of gravity, and (ii) a perpendicular distance from the ground to the instant center, less than 3/10.